

Please delete claims 3-5 without prejudice or disclaimer.

6. (Amended) The apparatus of Claim 1, wherein said heater is a resistive heater.

7. (Amended) The apparatus of Claim 6, wherein the well structures are made of a thermal conducting material and are separated by said thermal insulating material.

8. (Amended) The apparatus of Claim 7, wherein said thermal insulating material is glass, silicon, plastic, air contained in an air channel positioned proximal to the well structure, or ceramic.

Please delete claim 9 without prejudice or disclaimer.

10. (Amended) The apparatus of Claim 7, wherein the thermal conducting material is undoped silicon, modified plastics, silver, silver palladium, copper, nickel-molybdenum, platinum, or gold and the thermal insulating material is glass, silicon, plastic, ceramic, or air contained in an air channel positioned proximal to the well structure.

11. (Amended) The apparatus of Claim 1, wherein the well structures are coated with a compound that enhances biocompatibility between the components of the molecular reaction and said well structures.

12. (Unchanged) The apparatus of Claim 11, wherein the compound coating is parylene.

Please delete claim 13 without prejudice or disclaimer.

14. (Amended) The apparatus of Claim 1, wherein said heater is a thin film resistive heater.

15. (Amended) The apparatus of Claim 1, wherein said heater is a metal wire resistive heater.

337 16. (Amended) The apparatus of Claim 15, wherein said metal wire resistive heater is integrated into said supporting substrate.

17. (Amended) The apparatus of Claim 14 or 15 or 33, wherein said heaters are controlled using column-and-row electrical addressing.

ab 18. (Amended) The apparatus of Claim 14 or 15 or 33, wherein said heaters are controlled using individual electrical addressing.

19. (Amended) The apparatus of Claim 1, wherein said cooling element is a passive cooling system.

20. (Amended) The apparatus of Claim 1, wherein said cooling element is an active cooling system.

21. (Amended) The apparatus of Claim 20, wherein said active cooling system is an integrated cooling system.

22. (Amended) The apparatus of Claim 21, wherein said integrated cooling system is selected from the group consisting of a metal plate, an array of metal discs, and a thermo-electric cooler, wherein said integrated cooling system is in thermal contact with each of the well structures.

23. (Unchanged) The apparatus of Claim 1, wherein said temperature monitor is an integrated optical or electrochemical sensor system.

Please delete claims 24 and 25 without prejudice or disclaimer.

26. (Unchanged) The apparatus of Claim 1, further comprising sealed well structures.

27. (Unchanged) The apparatus of Claim 26, wherein the well structures are sealed using a layer of mineral oil.

28. (Unchanged) The apparatus of Claim 26, wherein the well structures are sealed using a cover.

29. (Amended) The apparatus of Claim 28, wherein the cover further comprises a heater.

30. (Amended) The apparatus of Claim 28, wherein said heater is an integrated heating system.